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(71) Applicant *(for all designated States except US)*: INTEL CORPORATION [US/US]; 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: MURTHY, Anand, S. [IN/US]; Apartment 1304, 1845 N.W. 173rd Avenue, Beaverton, OR 97006 (US). CHAU, Robert, S. [US/US]; 13525 S.W. Harness Lane, Beaverton, OR 97008 (US). MORROW, Patrick [US/US]; 6150 N.W. Simnasho Drive, Portland, OR 97229 (US). JAN, Chia-Hong [-/US]; 395 N.W. 176th Avenue, Portland, OR 97229 (US). PACKAN, Paul [CA/US]; 15025 S.W. Gibralter Court, Beaverton, OR 97007 (US).

(74) Agents: MILLIKEN, Darren, J. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).

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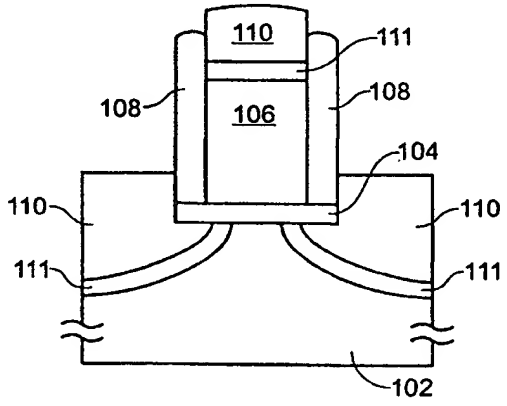
(54) Title: FIELD EFFECT TRANSISTOR STRUCTURE WITH ABRUPT SOURCE/DRAIN JUNCTIONS



(57) Abstract

Microelectronic structures embodying the present invention include a field effect transistor (FET) having highly conductive source/drain extensions. Formation of such highly conductive source/drain extensions includes forming a passivated recess which is back filled by epitaxial deposition of doped material to form the source/drain junctions. The recesses include a laterally extending region that underlies a portion of the gate structure. Such a lateral extension may underlie a sidewall spacer (108) adjacent to the vertical sidewalls of the gate electrode (106), or may extend further into the channel portion of a FET such that the lateral recess underlies the gate electrode portion of the gate structure. In one embodiment the recess is back filled by an in-situ epitaxial deposition of a bilayer of oppositely doped material. In this way, a very abrupt junction is achieved that provides a relatively low resistance source/drain extension and further provides good off-state subthreshold leakage characteristics. Alternative embodiments can be implemented with a back filled recess of a single conductivity type.